UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/662,661	09/15/2003	Jie Zhao	SLA1359	1864

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EXAMINER
RAO, ANAND SHASHIKANT

ART UNIT	PAPER NUMBER
2621	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/18/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

	Application No.	Applicant(s)
Office Action Summary	10/662,661	ZHAO ET AL.
	Examiner	Art Unit	
	Andy S. Rao	2621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☐ Responsive to communication(s) filed on _____ .
2a) ☐ This action is **FINAL**.   2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1-27* is/are pending in the application.
    4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) *1-7,13-21 and 27* is/are rejected.
7) ☒ Claim(s) *8-12 and 22-26* is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.
    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
    a)☐ All b)☐ Some * c)☐ None of:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
    3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date *9/15/03*.
4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____ .

DETAILED ACTION

Specification

1.   The specification has not been checked to the extent necessary to determine the presence

of all possible minor errors. Applicant's cooperation is requested in correcting any errors of

which applicant may become aware in the specification.

Claim Rejections - 35 USC § 102

2.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999

(AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002

do not apply when the reference is a U.S. patent resulting directly or indirectly from an

international application filed before November 29, 2000. Therefore, the prior art date of the

reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA

35 U.S.C. 102(e)).

3.   Claims 1-7, 13-21, and 27 rejected under 35 U.S.C. 102(e) as being anticipated by Wang

et al., (hereinafter referred to as "Wang").

Wang discloses in the transcoding of video streams, a method for adaptive rate control,

the method (Wang: column 19, lines 35-67; column 20, lines 1-10), comprising: accepting

frames of an input MPEG encoded video stream (Wang: column 7, lines 55-60); decoding the

video stream (Wang: column 7, lines 64-67; column 8, lines 1-9); determining video stream

complexity (Wang: column 9, lines 1-10); for each frame, calculating an output video stream

quantization parameter (Qo) responsive to determined video stream complexity (Wang: column

12, lines 20-25); and, encoding the output video stream into a protocol using Qo (Wang: column

11, lines 60-67), as in claim 1.

Regarding claim 2, Wang discloses accepting a target bit rate ratio (r) for transcoding the

video stream that is equal to the ratio of the target output video stream number of bits per frame

(No), to the input video stream number of bits per frame (Ni) as follows: $r = No/Ni$ (Wang:

column 13, lines 1-10); and, wherein calculating Qo responsive to determined video stream

complexity includes calculating Qo in response to the value of r (Wang: column 11, lines 20-25),

as in the claim.

Regarding claim 3, Wang discloses wherein determining the video stream complexity

includes calculating an average input video stream quantization factor (Qi) for each frame

(Wang: column 8, lines 60-67); and, wherein calculating Qo responsive to the determined video

stream complexity includes initially calculating Qo as follows: $Qo = Qi/r$ (Wang: column 12,

lines 20-25), as in the claim.

Regarding claim 4, Wang discloses wherein in accepting frames of an input MPEG encoded video stream includes accepting frames with a plurality of slices; and, wherein calculating Qi for each frame includes calculating the quantization parameter by averaging the Qi values for each slice in a frame (Wang: column 2, lines 35-40), as in the claim.

Regarding claim 5, Wang discloses wherein accepting an input MPEG encoded video stream includes accepting intra (I), predictive (P), and bi-directionally predictive (B) picture types (Wang: column 11, lines 10-15); and, wherein determining the video stream complexity of the input MPEG encoded video stream includes: independently determining the complexities of the I, P, and B picture types in the input video stream (Wang: column 11, lines 25-34); and, independently determining the complexities of the I, P, and B picture types in the output video stream (Wang: column 13, lines 50-67), as in the claim.

Regarding claim 6, Wang discloses wherein determining the video stream complexity includes determining a complexity ratio: of an accumulated complexity in the output video stream, to an accumulated complexity in the input video stream (Wang: column 13, lines 20-34), as in the claim.

Regarding claim 7, Wang discloses wherein the accumulated complexity in the input video stream is the product of Qi times Ni, (Wang: column 11, lines 20-25); accumulated over a plurality of frames; and, wherein the accumulated complexity of the output video stream is the product of Qo times No, accumulated over the plurality of frames (Wang: column 13, lines 20-35), as in the claim.

Regarding claim 13, Wang discloses accepting a target bit rate ratio (r) for transcoding the video stream equal to the ratio of the target output video stream number of bits per frame

(No), to the input video stream number of bits per frame (Ni) as follows: r = No/Ni (Wang: column 13, lines 1-10); and, wherein encoding the output video stream into a protocol using Qo includes encoding the output video stream into an MPEG-4 video stream using r (Wang: column 2, lines 37-42), as in the claim.

Wang discloses in the transcoding of video streams, a system for adaptive rate control, the method (Wang: figures 3-6), comprising: a decoder having an interface to accept frames of an input MPEG encoded video stream (Wang: column 7, lines 55-60), an interface to supply a decoded video stream (Wang: column 8, lines 1-9), and an interface to provide decoder process information (Wang column 7, lines 64-67); a transcoder control unit having an interface to accept decoding processing information (Wang: column 8, lines 43-50), the transcoder control unit determining video stream complexity (Wang: column 9, lines 1-10), and supplying an output stream quantization parameter (Qo) responsive to determined video stream complexity of the decoded video stream (Wang: column 12, lines 20-25); and, an encoder having an interface to accept the decoded video (Wang: column 7, lines 45-50), and interface to accept Qo (Wang: column 7, lines 40-45), and an interface to supply an output video stream encoded into a protocol using Qo (Wang: column 11, lines 60-67), as in claim 15.

Regarding claim 16, Wang discloses wherein the transcoder control unit has an interface to accept a target bit rate ratio (r) for transcoding the video stream that is equal to the ratio of the target output video stream number of bits per frame (No), to the input video stream number of bits per frame (Ni) as follows: r = No/Ni (Wang: column 13, lines 1-10); and, wherein the transcoder control unit calculates Qo responsive to determined video stream complexity includes calculating Qo in response to the value of r (Wang: column 11, lines 20-25), as in the claim.

Regarding claim 17, Wang discloses wherein the decoder supplies decoder processing information including an average input video stream quantization factor (Qi) for each frame (Wang: column 8, lines 60-67); and, wherein the transcoder control unit initially calculates Qo as follows: Qo= Qi/r (Wang: column 12, lines 20-25), as in the claim.

Regarding claim 18, Wang discloses wherein the decoder accepts frames of an input MPEG encoded video stream includes accepting frames with a plurality of slices; and, wherein the decoder calculates Qi for each frame includes calculating the quantization parameter by averaging the Qi values for each slice in a frame (Wang: column 2, lines 35-40), as in the claim.

Regarding claim 19, Wang discloses wherein the decoder accepts an input MPEG encoded video stream includes accepting intra (I), predictive (P), and bi-directionally predictive (B) picture types (Wang: column 11, lines 10-15); and, wherein the transcoder control unit independently determines the complexities of the I, P, and B picture types in the input video stream (Wang: column 11, lines 25-34), and independently determines the complexities of the I, P, and B picture types in the output video stream (Wang: column 13, lines 50-67), as in the claim.

Regarding claim 20, Wang discloses wherein the transcoder control unit calculates Qo in response to a complexity ratio: of an accumulated complexity in the output video stream, to an accumulated complexity in the input video stream (Wang: column 13, lines 20-34), as in the claim.

Regarding claim 21, Wang discloses wherein transcoder control unit calculates an accumulated complexity in the input video stream is the product of Qi times Ni, (Wang: column 11, lines 20-25), accumulated over a plurality of frames (Wang: column 13, lines 20-25); and,

calculates the accumulated complexity of the output video stream is the product of Qo times No,

accumulated over the plurality of frames (Wang: column 13, lines 20-35), as in the claim.

Regarding claim 27, Wang discloses wherein the transcoder control unit has an interface

to accept a target bit rate ratio (r) for transcoding the video stream equal to the ratio of the target

output video stream number of bits per frame (No), to the input video stream number of bits per

frame (Ni) as follows: r = No/Ni (Wang: column 13, lines 1-10); and, wherein the control unit

calculates Qo responsive to the value of r (Wang: column 11, lines 20-30); and wherein the

encoder encodes the output video stream into a MPEG-4 protocol (Wang: column 2, lines 37-

42), as in the claim.

Allowable Subject Matter

4.   Claims 8-12 are objected to as being dependent upon a rejected base claim, but would be

allowable if claim 8 is rewritten in independent form including all of the limitations of the base

claim 1 and intervening claims 2, 3, 6, and 7, while claims 22-26 are objected to as being

dependent upon a rejected base claim, but would be allowable if claim 22 is rewritten in

independent form including all of the limitations of the base claim 15, and intervening claims 16,

17, 20, and 21.

The prior art of record fails to make obvious or address "determining the video stream

complexity by expressing the complexity ratio with the specifically claimed mathematical

summation ratios..." as in dependent claims 8 and 22. Accordingly, if the amendments to claims

8 and 22 are made as indicated above, and if rejected claims 1-7, 13-21, and 27 are canceled, the

application would be placed in a condition for allowance.

Conclusion

5.   The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Yu discloses rate control with a picture-based lookahead window. Ducloux discloses a device and method for recoding a video data stream.

6.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andy S. Rao whose telephone number is (571)-272-7337. The examiner can normally be reached on Monday-Friday 8 hours.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mehrdad Dastouri can be reached on (571)-272-7418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Andy S. Rao
Primary Examiner
Art Unit 2621

asr
January 14, 2007

ANDY RAO
PRIMARY EXAMINER